

Calibration Laboratory of Microwave Measuring Equipment
of MWMLab



Calibration certificate

ISO 17025
ACCREDITED LABORATORY



Accreditation certificate No. № BY/112 5.0065 of 09.01.2015

Certificate number 13-21 Date when calibrated 11.02.2021 Page 1 of 2

Item calibrated VDI Power Meter PM5B # 571V

Customer Bureau Veritas Consumer Products Services (Hong Kong) Limited,
Taoyuan Branch

Method of calibration GOST 20271.1, MK KL 05.3-2014

All measurements are traceable to the SI units which are realized by national measurement standards of NMI and state standards of RF. Power measurements above 178 GHz are to confirm operation functionality and traceable only to MWMLab standards and OML. This certificate shall not be reproduced, except in full. Any publication extracts from the calibration certificate requires written permission of the issuing calibration laboratory of microwave measuring equipment.



Authorising signature

/ Technical manager Date of issue 11.02.2021

Calibration Certificate

Certificate number **13-21**

Page 2 of 2

Calibration is performed by using

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
M 514	Reference power meter	165	24 March 2022	1/111-176-20	RF Power
M 534	Reference power meter	161	24 March 2022	1/111-173-20	RF Power
V7-34	Universal voltmeter	0067787	23 September 2021	2742-42	DC Voltage
RCH3-72	Frequency meter	931200	18 September 2021	2822-43	Frequency
MG3694C	Signal generator	133805	11 September 2021	2726-43	RF Power Frequency
G4-186	Signal generator	5	12 October 2021	21-20	RF Power
RG4-14	Signal generator	22	12 October 2021	22-20	RF Power
02	Frequency multiplier	02	11 January 2023	05-21	RF Power
03	Frequency multiplier	03	11 January 2023	06-21	RF Power

Calibration conditions

Temperature: 22.2 °C.
Humidity: 37.0 %.
Pressure: 100.2 kPa.

Calibration results are given in the measurement report # 13-21

#	Parameter	Specifications required	Specifications tested and measured
1	Frequency range	75 – 330 GHz	Corresponds
2	Waveguide	WR-10	Corresponds
3	Input Loss (calibration factor), dB	0.15 – 0.30 dB	Corresponds (Table 1)
4	Typical RF accuracy	5* %	Corresponds (Table 1)

* – Expanded uncertainty of measurements 18 %.

The uncertainty evaluation has been performed in accordance with ISO/IEC Guide 98-3:2008 (GUM). The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %. This probability corresponds to a coverage factor of $k=2$ for a normal distribution.

Signature of the person who has performed calibration



/ Engineer

**Calibration Laboratory of
Microwave Measuring Equipment**

Accreditation certificate

No. BY/112 5.0065

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Technical Manager



February 11, 2021

MEASUREMENT REPORT # 13-21

February 11, 2021

Customer:	Bureau Veritas Consumer Products Services (Hong Kong) Limited, Taoyuan Branch
Item calibrated:	VDI Power Meter PM5B # 571V
Method of calibration:	GOST 20271.1, MK KL 04.3-2014
Number of samples:	One
Delivery date of the sample:	14.01.2021
Date of calibration:	From 14.01.2021 to 11.02.2021

MEASUREMENT CONDITIONS

Temperature: 22.2 °C	Humidity: 37 %	Pressure: 100.2 kPa
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MEASUREMENT EQUIPMENT

Model	Model Description	Equipment ID	Cal Due Date	Certificate Number	Trace Value
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MEASUREMENT RESULTS

Table 1

Frequency, GHz	110	220	330
Reference power, mW	1.0	0.50	0.50
Input Loss (calibration factor), dB	0.17	0.19	0.19
Measured power, mW	0.967	0.521	0.447
RF accuracy, %	-3.3	+4	-11
Expanded uncertainty, %	7.2	11	18

The uncertainty evaluation has been performed in accordance with ISO/IEC Guide 98-3:2008 (GUM). The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k such that the coverage probability corresponds to approximately 95 %. This probability corresponds to a coverage factor of $k=2$ for a normal distribution.

Engineer



This measurement report issued in duplicate and sent to:

1. Bureau Veritas Consumer Products Services (Hong Kong) Limited, Taoyuan Branch
2. Calibration Laboratory of Microwave Measuring Equipment

Duplication of Measurement report (complete or partial) must be authorized by the laboratory.